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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/753,927

01/08/2004

Brent M. Ledvina

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EXAMINER

GHEBRETINSAE, TEMESGHEN

ART UNIT

PAPER NUMBER

2637

DATE MAILED: 03/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/753,927	LEDVINA ET AL.	
	Examiner	Art Unit	
	Temesghen Ghebretinsae	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 14-20 and 26-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8 and 26-37 is/are allowed.
- 6) ☒ Claim(s) 1-7, 14-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1/8/04, 12/02/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. It would be of great assistance to the Office if all incoming papers pertaining to a filed application carried the following items:

1. Application number (checked for accuracy, including series code and serial no.).
2. Group art unit number (copied from most recent Office communication).
3. Filing date.
4. Name of the examiner who prepared the most recent Office action.
5. Title of invention.
6. Confirmation number (See MPEP § 503).

Information Disclosure Statement

2. The examiner has considered the references listed in the PTO-1449.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1,5-7 are rejected under 35 U.S.C. 102(a) as being anticipated by Akos et al. "Real-Time GPS Software Radio Receiver" ION NTM 2001.

5. Akos discloses a software receiver comprising: a receiver capable of receiving radio signal; means for digitizing the radio signal; and as software correlator. The digitizing comprises means for down converting the radio signal and digitizing the IF as claimed in claim 5, .The digitizer produces at least one bit/sample and the digitizer is an analog to digital converter as claimed in claims 6-7. (See figs.1 and 2)

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-7,14-20 are rejected under 35 U.S.C. 102(b) as being anticipated by B.M. Ledvina et al. "A 12 Channel Real-Time GPS Software Receiver".

Consider claims 1-7. Ledvina et al discloses a GPS software receiver comprising: a receiver capable of receiving radio signal; means for digitizing the radio signal; and a software correlator. The software correlator comprises means for computing correlation between the baseband signal and at least one PRN using bit-wise parallelism and means for computing accumulations. The receiver further comprises application specific code capable of computing navigation data. The digitizing comprises means for down converting the radio signal and digitizing the IF as claimed in claim 5, .The digitizer produces at least one bit/sample and the digitizer is an analog to digital converter. (See fig.2 and abstract)

Consider claims 14-20. Ledvina discloses a software receiver comprising: a front-end device capable of receiving a radio signal, said front-end device capable of converting the radio signal into signal data; a data acquisition device capable of receiving the signal data, said data acquisition device capable of providing the signal data to a microprocessor; at least one shift register capable of packing the signal data into at least one data word; a baseband mixer capable of computing at least one baseband mixed signal as a function of the at least one data word by using bit-wise parallel processing; a correlator capable of computing correlations between the baseband mixed signal and a pseudo-random number (PRN) code replica signal; and an accumulator capable of computing summed accumulations by accumulating the correlations. The signal

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data further comprises a signal sign and signal magnitude. The correlator uses the bit-wise parallel processing. (See abstract). The radio signal can be received from GPS. (See abstract and paragraph 4-6, pages 7-11; paragraph 6.2-6.3 and pages 16-19 and page 23. and fig.2.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1,5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Yang (6,407,699).

Yang discloses a GPS software receiver comprising: a receiver capable of receiving radio signal; means for digitizing the radio signal; and a software correlator. The digitizing comprises means for down converting the radio signal and digitizing the IF as claimed in claim 5, .The digitizer produces at least one bit/sample and the digitizer is an analog to digital converter as claimed in claims 6-7. (See figs. 1 and 2 col.7, line 35 to col. 8, line 26)

Allowable Subject Matter

8. Claims 8, 26-37 are allowed.
9. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record (Yang and Akos) fail to anticipate or render obvious the claimed method for processing at least one radio frequency (RF) signal over an accumulation period comprising the steps of: receiving at least one RF signal; mixing the at least one RF signal to form a baseband mixed signal using bit-wise parallelism;

computing a fully mixed prompt integrand as a function of the baseband mixed signal and a pre-selected pseudo-random number (PRN) code using the bit-wise parallelism; computing a fully mixed early-minus-late integrand as a function of the baseband mixed signal and the pre-selected PRN code using the bit-wise parallelism; computing in-phase and quadrature summed accumulations over the accumulation period, the in-phase accumulation and quadrature summed accumulations being functions of the fully mixed prompt integrand and the fully mixed early-minus-late integrand; and rotating the in-phase and quadrature summed accumulations to correct for effects of frequency and phase granularity of the baseband mixed signal as claimed in claim 8.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Temesghen Ghebretinsae whose telephone number is 571-272-3017. The examiner can normally be reached on Monday-Friday from 8 to 5. The examiner can also be reached on alternate.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel, can be reached on 571-272-2688. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic
Business Center (EBC) at 866-217-9197 (toll-free).

Temesghen Ghebretinsae
Primary Examiner
Art Unit 2637

T.G.

3/9/05.


TEMESGHEN GHEBRETINSAE
PRIMARY EXAMINER
3/8/05